



ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-D3 BYPASS RATIO: 9.0
 UNIQUE ID NUMBER: 02P23RR128 PRESSURE RATIO (π_{co}): 46.0
 COMBUSTOR: Phase5 Tiled
 ENGINE TYPE: TF RATED THRUST (F_{oo}) (kN): 334.7

REGULATORY DATA

CHARACTERISTIC VALUE:	HC	CO	NO _x	SMOKE NUMBER
D_p/F_{oo} (g/kN) or SN	0.0	9.0	68.2	16.4
AS % OF ORIGINAL LIMIT	0.0	7.6	51.6	96.4
AS % OF CAEP/2 LIMIT (NO _x)			64.6	
AS % OF CAEP/4 LIMIT (NO _x)			68.9	
AS % OF CAEP/6 LIMIT (NO _x)			74.9	
AS % OF CAEP/8 LIMIT (NO _x)			83.0	

For non-volatile particulate matter (nvPM) emissions, please refer to the ICAO Engine nvPM Emissions Data Sheet.

DATA STATUS

- PRE-REGULATION
 x CERTIFICATION
 - REVISED (SEE REMARKS)

TEST ENGINE STATUS

- NEWLY MANUFACTURED ENGINES
 x DEDICATED ENGINES TO PRODUCTION STANDARD
 - OTHER (SEE REMARKS)

EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE
 (ANNEX 16 VOLUME II)

CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)
 - OUT OF PRODUCTION (DATE: -)
 - OUT OF SERVICE (DATE: -)

MEASURED DATA

MODE	POWER SETTING (% F_{oo})	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO _x	
TAKE-OFF	100	0.7	2.556	0.00	0.42	55.28	8.2
CLIMB OUT	85	2.2	2.090	0.00	0.42	41.46	11.4
APPROACH	30	4.0	0.687	0.00	0.61	14.26	9.3
IDLE	7	26.0	0.256	0.00	6.51	5.79	1.9
LTO TOTAL FUEL (kg) or EMISSIONS (g)			947	0	2860	22034	-
NUMBER OF ENGINES				8	8	8	8
NUMBER OF TESTS				18	18	18	18
AVERAGE D_p/F_{oo} (g/kN) or AVERAGE SN (MAX)				0.0	8.5	65.8	14.7
SIGMA (D_p/F_{oo} in g/kN, or SN)				0.0	1.7	0.8	2.0
RANGE (D_p/F_{oo} in g/kN, or SN)				0.0	5.47-10.65	64.73-66.95	11.4-16.7

ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS
 STAGE BLEED 0 (% CORE FLOW) AT - POWER SETTINGS

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.9-102.1
TEMPERATURE (K)	280.4-303.5
ABS HUMIDITY (kg/kg)	0.00308-0.01917

FUEL

SPEC	
H/C	1.92
AROM (%)	16.89

MANUFACTURER: Rolls-Royce plc
 TEST ORGANIZATION: Rolls-Royce plc
 TEST LOCATION: Derby
 TEST DATES: 24/09/2009-28/08/2019

NO_x REGULATION PARAGRAPH

	2.3.2 c) (CAEP/4)
	2.3.2 d) (CAEP/6)
x	2.3.2 e) (CAEP/8)

REMARKS

1. Representative of Trent 1000-TEN engines
2. EDNS01000935986

Compliance with Fuel Venting requirements:

x ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)